

TWO NEW SPECIES OF AUSTRALIAN FROGS OF THE HYLID GENUS *NYCTIMYSTES*

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SUMMARY

The Hylid frog genus *Nyctimystes* is reported from Australia for the first time. Two new species are described from montane rainforest in north-eastern Queensland, and it is suggested that the distribution of Australian *Nyctimystes* will prove to be confined to similar environments within that area.

INTRODUCTION

Within the Australian zoogeographical region the frog family Hylidae is represented by two genera: *Hyla* and *Nyctimystes*. *Nyctimystes* (as re-defined by Zweifel, 1958) may be distinguished from *Hyla* by the presence of a palpebral venation and the shape of the constricted pupil (a vertical slit in *Nyctimystes* as opposed to a horizontal slit in *Hyla*). *Hyla* is widespread throughout Australia and New Guinea, whereas *Nyctimystes* is believed to be confined to New Guinea.

In 1956, Mr. William Hosmer collected a small, conspicuously coloured Hylid frog in north-eastern Queensland which subsequently proved to be a *Nyctimystes* species.

A second specimen of *Nyctimystes* from north-eastern Queensland was recently found by the author amongst a collection of unidentified Australian Hylids received on loan from the Naturhistorisches Museum of Vienna. Comparison of this specimen with the one taken by Hosmer reveals that they are distinct species, each of which is new to science.

Nyctimystes hosmeri new species

Holotype—American Museum of Natural History No. 65538, a male from Tully Falls, Cape York Peninsula, Queensland, Australia, collected by Mr. William Hosmer on April 22, 1956.

Description of Holotype—The vomerine teeth are in two small, almost circular series which are widely separated from one another and situated beneath the posterior borders of the choanae. The tongue is half as wide as the mouth, cordiform in shape, its posterior border free and very slightly indented. The head is slightly longer than broad (head length 11.8 mm; head breadth 11.4 mm). The snout is rounded when viewed from above, and rounded in profile with an obscure canthus rostralis and oblique loreal region. The nostrils are inconspicuous and separated from one another by a distance which is slightly less than the distance between naris and eye; eye to naris 3.4 mm; internarial span 3.2 mm. The eye is prominent with a horizontal diameter of 4.7 mm; the pupil is almost completely dilated and nicked medially on its superior and inferior borders. The tympanum is small, 1.4 mm diameter, and indistinct and separated from the eye by a distance equal to its own diameter.

The distance between the snout and the vent is 33.5 mm.

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The fingers are long and slender with small terminal discs, and are approximately one-half webbed. The fourth finger is slightly longer than the second, but does not quite reach the disc of the third; the disc on the third finger covers approximately two-thirds of the tympanum. There is a rudiment of a pollex which projects slightly

The toes are almost fully webbed, the webbing on the fourth toe reaching the base of the penultimate phalanx and continuing to the disc as a fringe. The toe discs are smaller than the finger discs; the disc on the fourth toe covers slightly more than one-half of the tympanum. There is a narrow inner but no outer metatarsal tubercle. The legs are rather long; the tibia length is 18.8 mm and the ratio of tibia length to snout to vent length is 0.561. When the hindleg is adpressed the heel reaches well beyond the tip of the snout; when the limbs are laid along the sides the knee and elbow overlap considerably; when the hindlegs are bent at right angles to the axis of the body the heels overlap slightly.

The skin covering the dorsal surfaces of the head and body is smooth except in those small areas marked with cream where it is granular. The lateral surfaces are slightly granular, and the throat, chest, abdomen and lower femur coarsely granular. There is a weakly defined supratympanic fold, but no trace of a skinfold across the chest.

The dorsal surfaces of the head, body and limbs are dark brown. On the head and body are several roughly circular, asymmetrically arranged, large cream

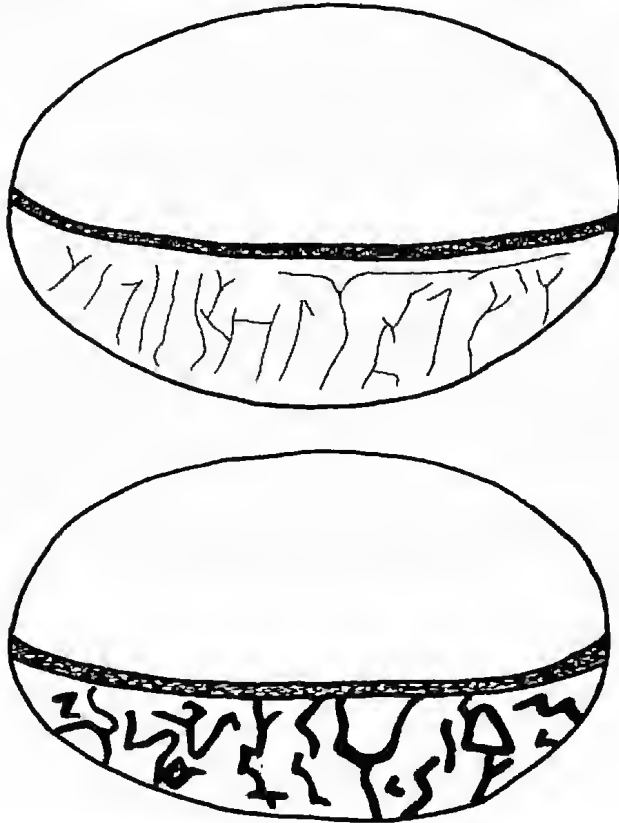


Fig. 1. Palpebral Venations. Top: *Nyctimystes vestigea*; bottom: *N. kosmeri*.

spots. Each of these spots has a black centre. On the tibiae are traces of irregular banding or marbling of pale brown. The lower surfaces of the limbs are a dull yellowish-brown; the posterior surfaces of the thighs are dark brown and there are traces of pearl in the groin.

The palpebral venation consists of pearl-coloured veins distributed in the form of a reticulum, with a tendency for most of the longer veins to be orientated in the vertical plane.

Collector's Notes—The specimen was found on a leaf of a tree during the daytime. Its colour in life was described as light green above with conspicuous white, black-centred, spots; below yellowish-white; anal region darker. Taken at an altitude of 2,670 feet above sea-level.

Comparison with other Species—The unusual colouration and the long slender digits with their very small discs will distinguish *N. hosmeri* from the sixteen other species known at the present time. Two species (*N. humeralis* (Boulenger) and *N. forficula* Tyler) share with *hosmeri* a similar dorsal colour, but these species lack the distinctive markings exhibited by *hosmeri*. *Nyctimystes humeralis* is an extremely large species in which the males may attain a length of up to 100 mm., and are characterised by the presence of a sharp projecting spike on the interior face of the humerus. The palpebral venation of *forficula* consists of extremely broad, oblique, black veins permitting light to enter via narrow slits. In *hosmeri* the veins are extremely broad and form an irregular, pearl-coloured network.

Nyctimystes vestigia new species

Holotype—Naturhistorisches Museum, Vienna, No. 17187, a female from Mount Bartle Frere, Cape York Peninsula, Queensland, Australia, collected February, 1897. Collector unknown.

Description of Holotype—The vomerine teeth are on two large, triangular elevations fused in the midline and lying beneath the small, oval choanae. The tongue is one-third as wide as the mouth and cordiform in shape, its posterior border free and very slightly indented. The head is large, flattened and broader than long (head breadth 18.3 mm; head length 17.9 mm). The snout is large, rounded when viewed from above, and strongly rounded in profile. The canthus rostralis is straight and inconspicuous; the loreal region is concave and oblique, the upper lip flaring out strongly below it. The nostrils are prominent and separated from one another by a distance which is slightly less than the distance between eye and naris; eye to naris distance 5.0 mm; inter-narial span 4.6 mm. The eye is large and prominent, its horizontal diameter 5.8 mm; the pupil is dilated and nicked medially on its superior and inferior borders. The tympanum is small with a diameter of 1.8 mm, and indistinct, only a portion of the tympanic annulus being visible; the tympanum is separated from the eye by a distance which is nearly equal to the diameter of the tympanum.

The distance between the snout and the vent is 53.2 mm.

The fingers are broadly fringed and two-thirds webbed, the webbing on the outer finger reaching slightly above the subarticular tubercle at the base of the penultimate phalanx; fourth finger longer than second, nearly reaching disc of third, which covers about two-thirds of the tympanic area. The first finger is almost completely opposed to the fourth. The finger discs do not project laterally beyond the fringes.

The toes are fully webbed and the disc of the fourth toe covers slightly more than two-thirds of the tympanic area. There is a distinct, narrow, oval inner but no outer metatarsal tubercle. The legs are rather long with a tibia

length of 28.7 mm, and a tibia length to snout to vent length ratio of 0.539. When the hindleg is adressed the heel reaches beyond the tip of the snout; when the limbs are laid along the sides the knee and elbow overlap slightly; when the hindlegs are bent at right angles to one another the heels overlap slightly.

The skin covering the dorsal surfaces of the head and body is minutely glandular. The lateral surfaces of the body are slightly granular, and the throat, chest, abdomen and lower femur coarsely granular. There is a wide patagium extending from the back of the upper arm to the side of the body, a supratympanic fold hiding the upper portion of the tympanum and a disrupted dermal ridge along the outer edge of the forearm.

The dorsal surfaces of the head, body and limbs are light brown with indistinct creamish-brown markings as follows: a poorly defined patch beneath the canthus rostralis, and irregular mottling on the coccygeal region, thigh, tibia, foot, forearm and hand. The posterior surfaces of the thighs are very dark brown. The lower surfaces of the body and limbs are cream; the palmar and plantar surfaces are pale brown, and the anterior surface of the thigh a pale slate colour.

The palpebral venation consists of a few fine, slightly disrupted, largely vertical veins.

Comparison with Other Species—The presence of extensively webbed fingers, appposable first finger and the form of the palpebral venation distinguish *N. vestigea* from *N. hosmeri* and all other *Nyctimystes* species known at the present time. The finger webbing of *N. perimetri* Zweifel is almost as extensive as that of *vestigea* but, in addition to the differences in the position of the first finger and the form of the palpebral venation (a pattern of oblique to almost vertical lines with a few horizontal connections in *perimetri*), *perimetri* exhibits a triangular dermal appendage on the heel and a distinct tympanum, and there is little likelihood of confusing the two species.

DISCUSSION

The eighteen Papuan *Nyctimystes* species known at the present time are confined to areas of subtropical rainforest. There are only two records of specimens being found at altitudes of less than 1,000 feet above sea-level, and in fact the vast majority have not been taken below 3,500 feet. As the *N. hosmeri* holotype was collected at an altitude of over 2,500 feet at Tully Falls and it is possible that the *vestigea* holotype could have been taken at a similar elevation on Mt. Bartle Frere, it seems reasonable to predict that the distribution of *Nyctimystes* in Australia will prove to be restricted to montane rainforest. Such a distribution pattern would provide a parallel to that of the Australian species of the predominantly Papuan Microhylid genera *Cophixalus* and *Sphenophryne* reported by Zweifel (1962).

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REFERENCES

- ZWEIFEL, R. G., 1958: Results of the Archbold Expeditions. No. 78, Frogs of the Papuan Hyliid Genus *Nyctimystes*. Amer. Mus. Novit. No. 1896, pp. 1-51.
 ZWEIFEL, R. G., 1962: A Systematic Review of the Microhylid Frogs of Australia. Amer. Mus. Novit. No. 2113, pp. 1-40.